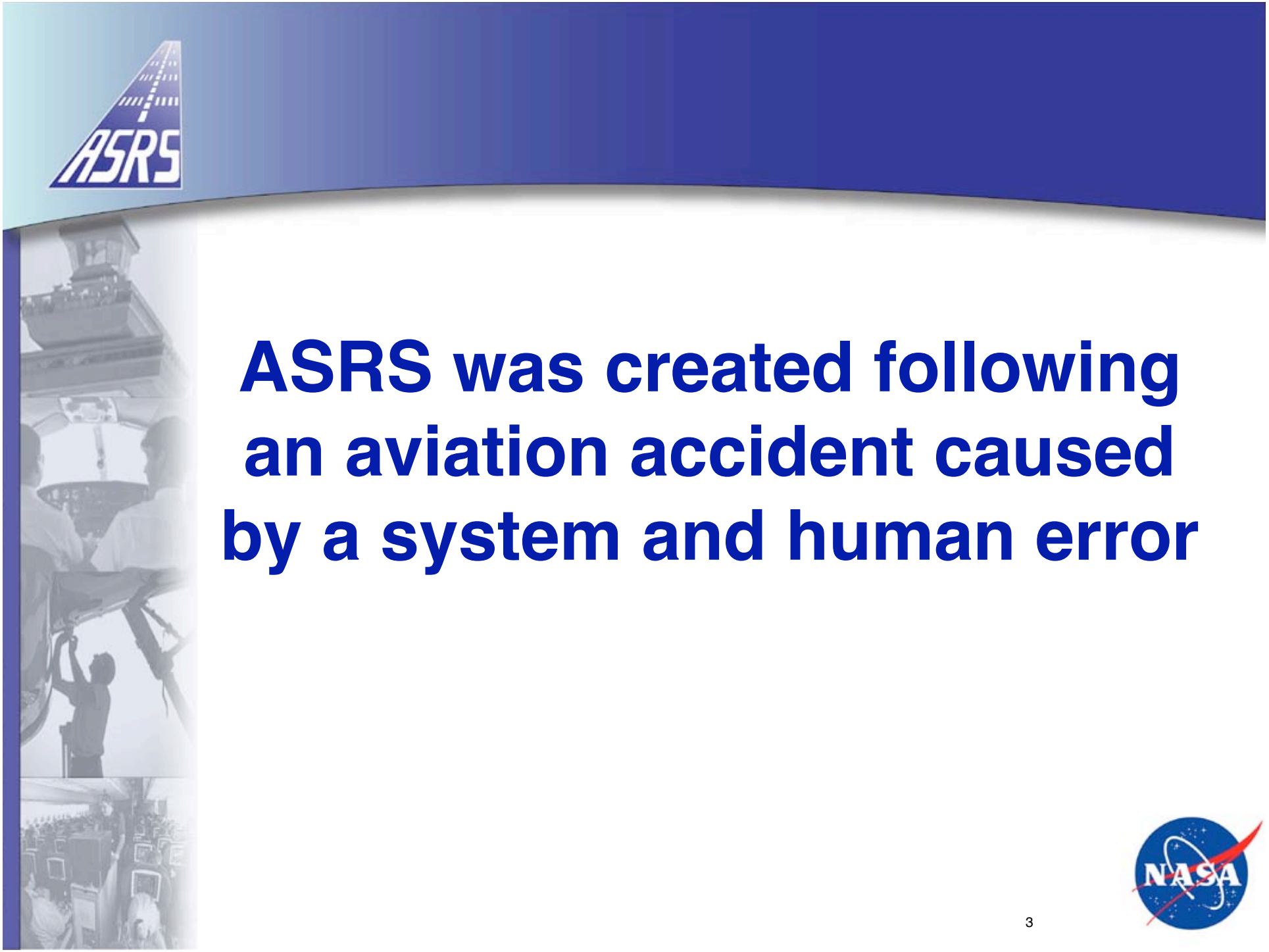
NASA/Industry
Airport Planning Workshop

Designs to Improve Airport Safety

September 9, 2005

Linda Connell, Director
Aviation Safety Reporting System

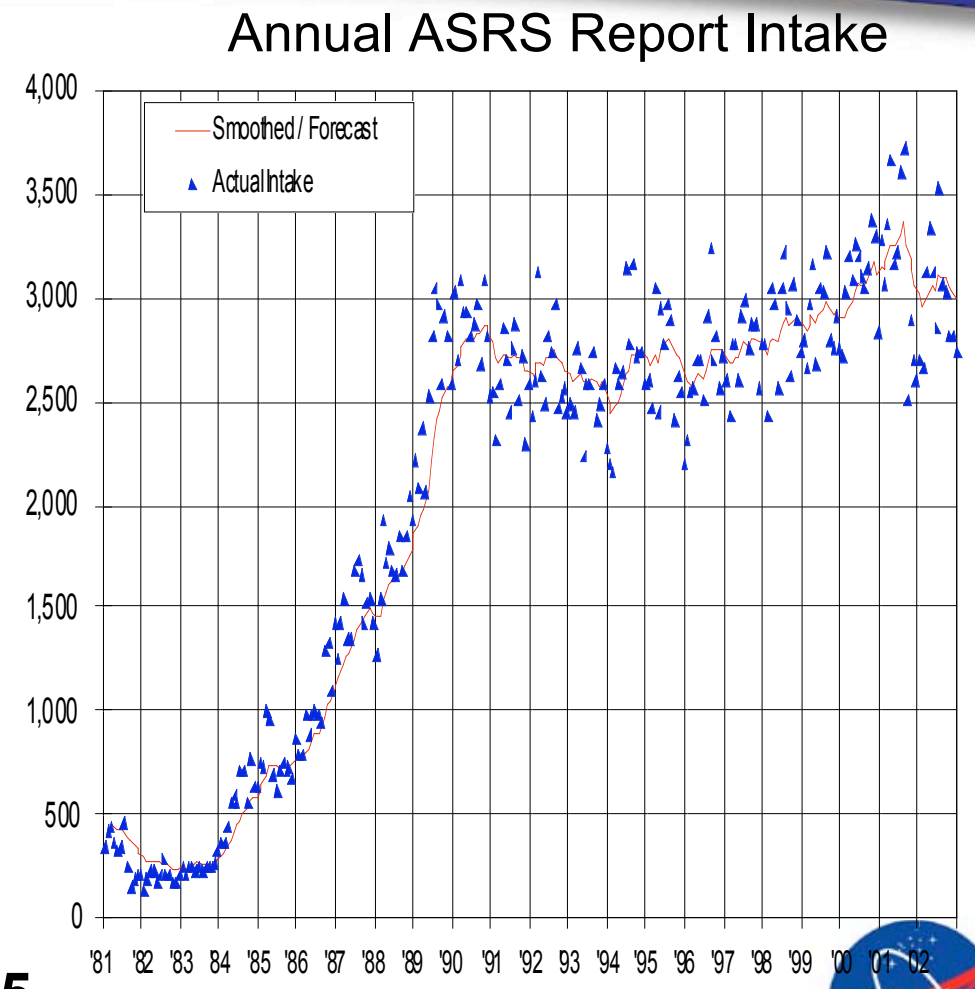
AVIATION SAFETY REPORTING SYSTEM (ASRS)



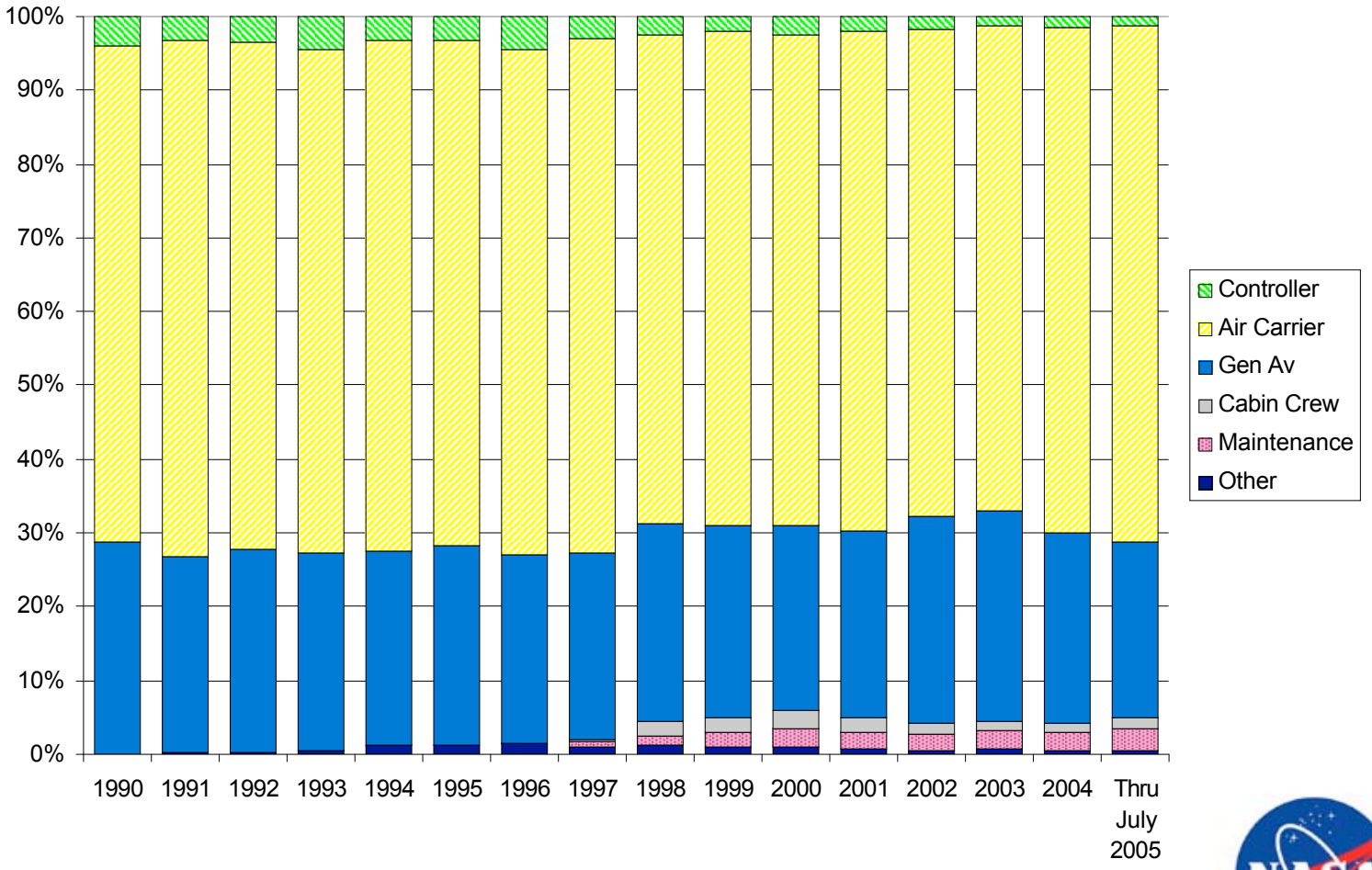
ASRS was created following an aviation accident caused by a system and human error

ASRS Report Intake

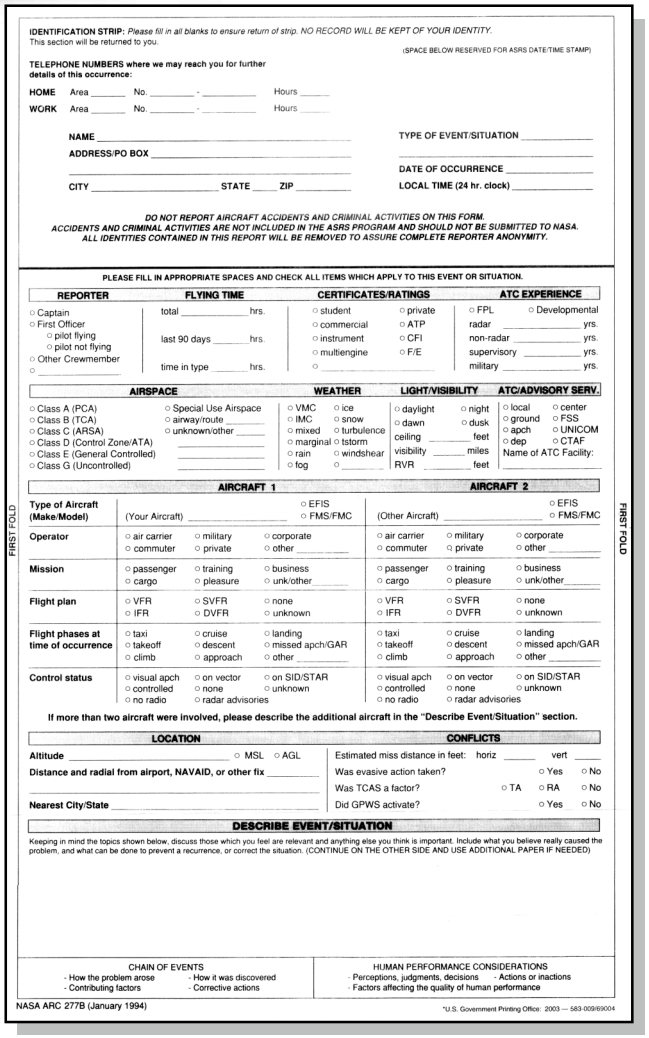
- An Increase of 70% Since 1988
- Averaging 2,900 Reports Per Month
  - 145 per working day
- Total 2004 Report Intake = 38,318 Reports
- Intake projected to exceed 40,000 in 2005



ASRS Reporter Distribution



ASRS Information Output



IDENTIFICATION STRIP: *Please fill in all blanks to ensure return of strip. NO RECORD WILL BE KEPT OF YOUR IDENTITY.*
This section will be returned to you.

(SPACE BELOW RESERVED FOR ASRS DATE/TIME STAMP)

TELEPHONE NUMBERS where we may reach you for further details of this occurrence:

HOME Area _____ No. _____ - _____ Hours _____
WORK Area _____ No. _____ - _____ Hours _____

NAME _____
ADDRESS/PO BOX _____
CITY _____ STATE ____ ZIP _____

TYPE OF EVENT/SITUATION _____
DATE OF OCCURRENCE _____
LOCAL TIME (24 hr. clock) _____

DO NOT REPORT AIRCRAFT ACCIDENTS AND CRIMINAL ACTIVITIES ON THIS FORM.
ACCIDENTS AND CRIMINAL ACTIVITIES ARE NOT INCLUDED IN THE ASRS PROGRAM AND SHOULD NOT BE SUBMITTED TO NASA.
ALL IDENTITIES CONTAINED IN THIS REPORT WILL BE REMOVED TO ASSURE COMPLETE REPORTER ANONYMITY.

PLEASE FILL IN APPROPRIATE SPACES AND CHECK ALL ITEMS WHICH APPLY TO THIS EVENT OR SITUATION.

REPORTER
○ Captain
○ First Officer
○ pilot flying
○ pilot not flying
○ Other Crewmember
○ _____

FLYING TIME
total _____ hrs.
last 90 days _____ hrs.
time in type _____ hrs.

CERTIFICATES/RATINGS
○ student ○ private
○ commercial ○ ATP
○ instrument ○ CFI
○ multiengine ○ F/E
○ _____

ATC EXPERIENCE
○ FPL ○ Developmental
radar _____ yrs.
non-radar _____ yrs.
supervisory _____ yrs.
military _____ yrs.

AIRSPACE
○ Class A (PCA)
○ Class B (TCA)
○ Class C (ARSA)
○ Class D (Control Zone/ATA)
○ Class E (General Controlled)
○ Class G (Uncontrolled)
○ Special Use Airspace
○ airway/route _____
○ unknown/other _____

WEATHER
○ VMC ○ ice
○ IMC ○ snow
○ mixed ○ turbulence
○ marginal ○ tstorm
○ rain ○ windshear
○ fog ○ _____

LIGHT/VISIBILITY
○ daylight ○ night
○ dawn ○ dusk
ceiling _____ feet
visibility _____ miles
RVR _____ feet

ATC/ADVISORY SERV.
○ local ○ center
○ ground ○ FSS
○ apch ○ UNICOM
○ dep ○ CTAF
Name of ATC Facility: _____

FIRST FOLD

	AIRCRAFT 1	AIRCRAFT 2
Type of Aircraft (Make/Model)	(Your Aircraft) _____ ○ EFIS ○ FMS/FMC	(Other Aircraft) _____ ○ EFIS ○ FMS/FMC
Operator	○ air carrier ○ military ○ corporate ○ commuter ○ private ○ other _____	○ air carrier ○ military ○ corporate ○ commuter ○ private ○ other _____
Mission	○ passenger ○ training ○ business ○ cargo ○ pleasure ○ unk/other _____	○ passenger ○ training ○ business ○ cargo ○ pleasure ○ unk/other _____
Flight plan	○ VFR ○ SVFR ○ none ○ IFR ○ DVFR ○ unknown	○ VFR ○ SVFR ○ none ○ IFR ○ DVFR ○ unknown
Flight phases at time of occurrence	○ taxi ○ cruise ○ landing ○ takeoff ○ descent ○ missed apch/GAR ○ climb ○ approach ○ other _____	○ taxi ○ cruise ○ landing ○ takeoff ○ descent ○ missed apch/GAR ○ climb ○ approach ○ other _____
Control status	○ visual apch ○ on vector ○ on SID/STAR ○ controlled ○ none ○ unknown ○ no radio ○ radar advisories	○ visual apch ○ on vector ○ on SID/STAR ○ controlled ○ none ○ unknown ○ no radio ○ radar advisories

If more than two aircraft were involved, please describe the additional aircraft in the "Describe Event/Situation" section.

FIRST FOLD

LOCATION
Altitude _____ ○ MSL ○ AGL
Distance and radial from airport, NAVAID, or other fix _____
Nearest City/State _____

CONFLICTS
Estimated miss distance in feet: horiz _____ vert _____
Was evasive action taken? ○ Yes ○ No
Was TCAS a factor? ○ TA ○ RA ○ No
Did GPWS activate? ○ Yes ○ No

DESCRIBE EVENT/SITUATION
Keeping in mind the topics shown below, discuss those which you feel are relevant and anything else you think is important. Include what you believe really caused the problem, and what can be done to prevent a recurrence, or correct the situation. (CONTINUE ON THE OTHER SIDE AND USE ADDITIONAL PAPER IF NEEDED)

CHAIN OF EVENTS
- How the problem arose
- Contributing factors
- How it was discovered
- Corrective actions

HUMAN PERFORMANCE CONSIDERATIONS
- Perceptions, judgments, decisions
- Factors affecting the quality of human performance
- Actions or inactions

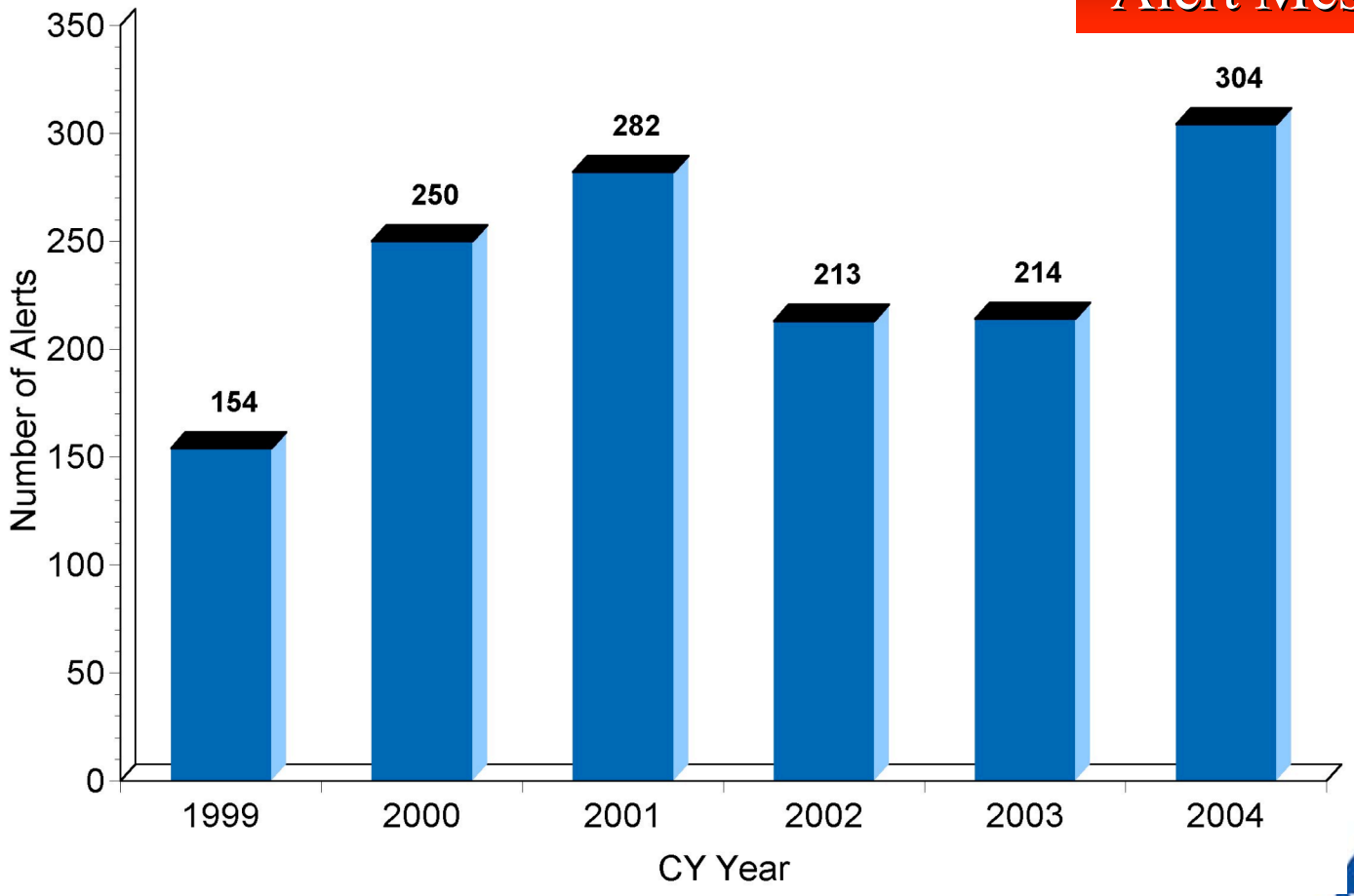
NASA ARC 277B (January 1994)

*U.S. Government Printing Office: 2003 — 583-009/69004

- Alert Messages
- Search Requests
- Education
- Research

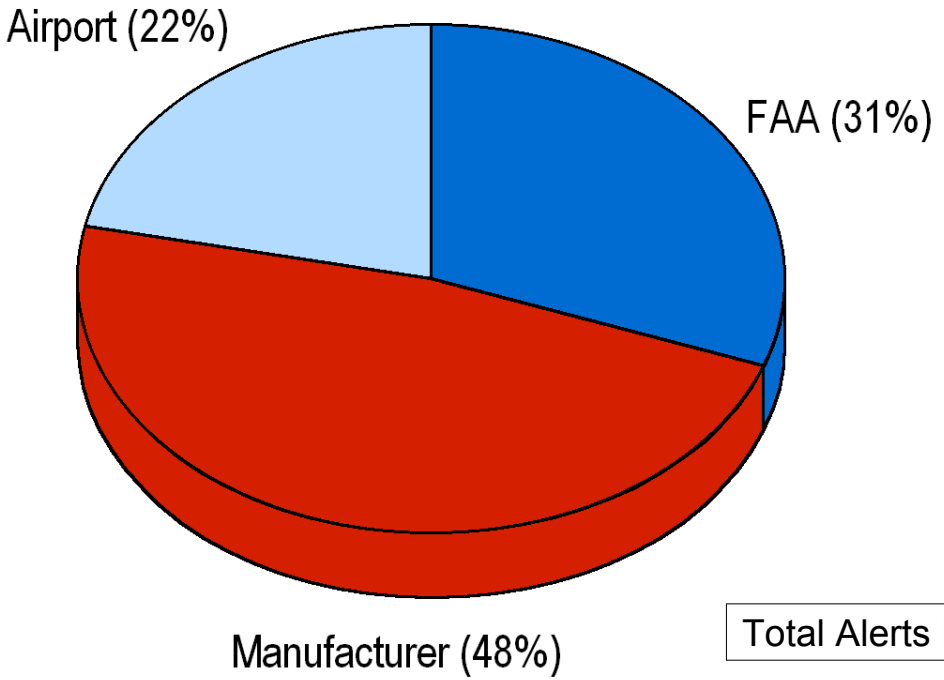
Safety Alert Messages
1999 – 2004

Alert Messages



Safety Alerts Distribution
1999 – 2004

Alert Messages

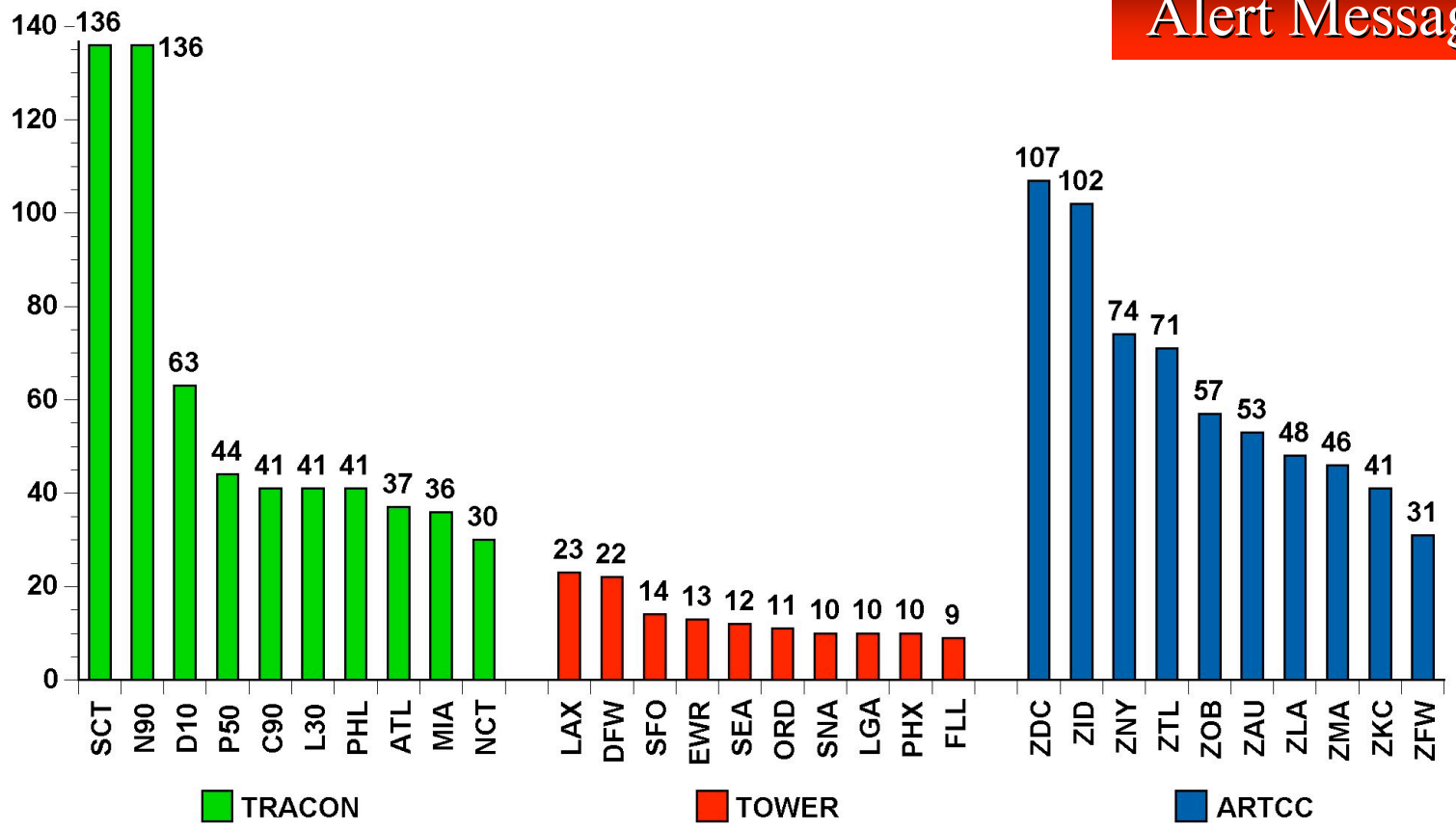


Total Alerts Issued in 2004 = 304

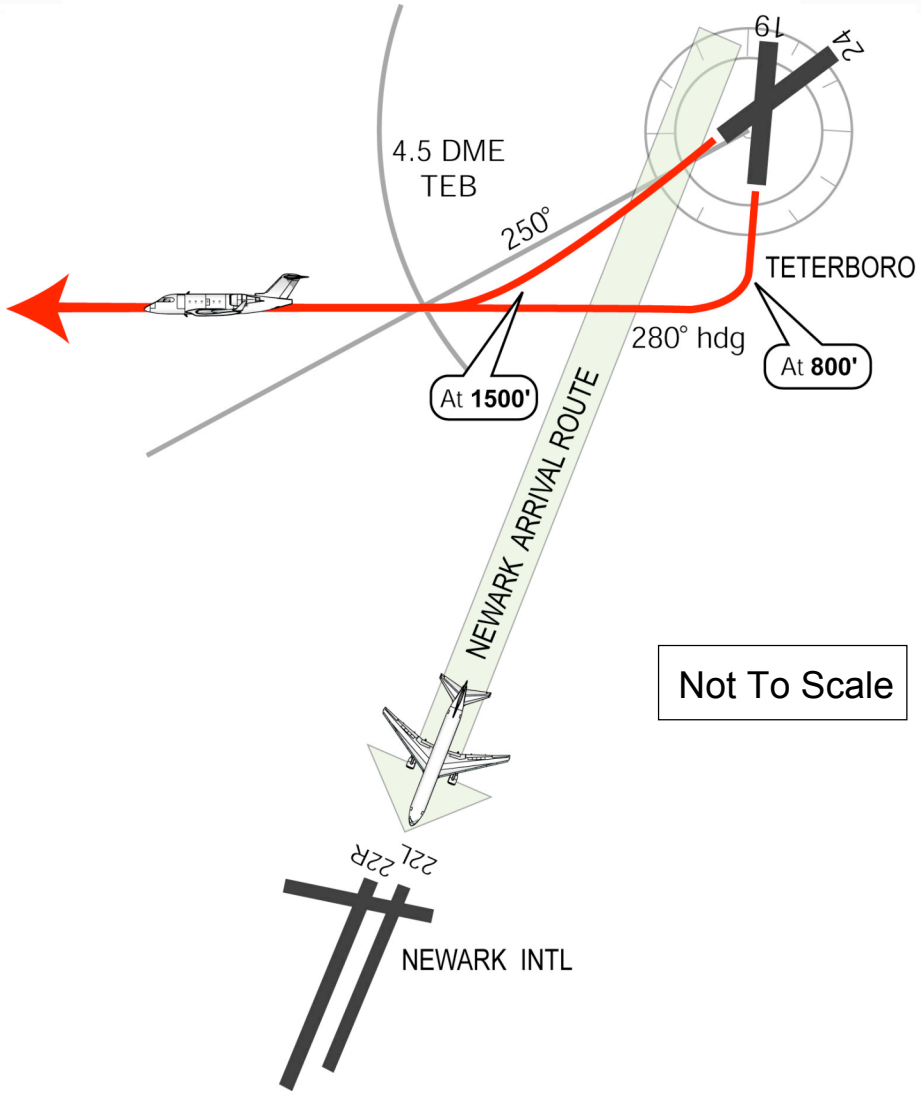
TCAS Event Locations

1999 - 2004

Alert Messages



Teterboro/Newark Conflicts



Alert Messages

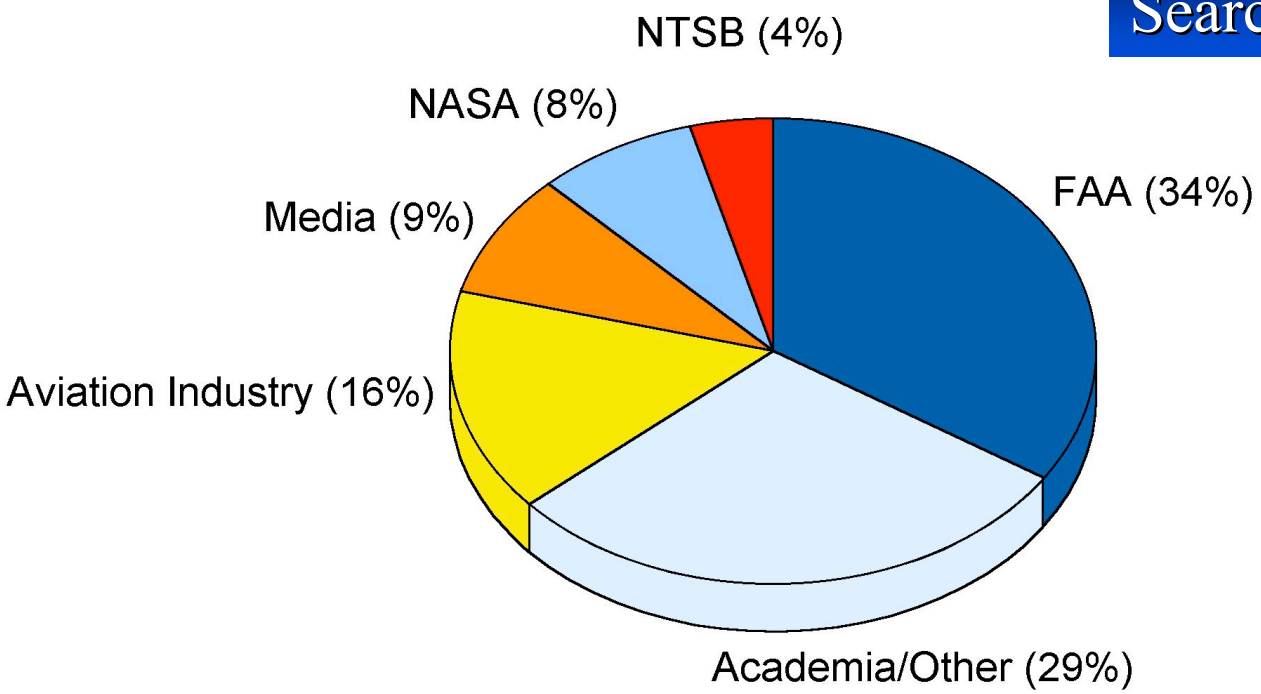
Not To Scale

Search Requests

- **Requests for ASRS reports from…**
  - **Government**
  - **Industry**
  - **Academia**
  - **Media**

ASRS Database 2004 Search Requests

Search Requests



Search Requests often used for education in ATC Facilities, Airlines, General Aviation, and others

ASRS Publications

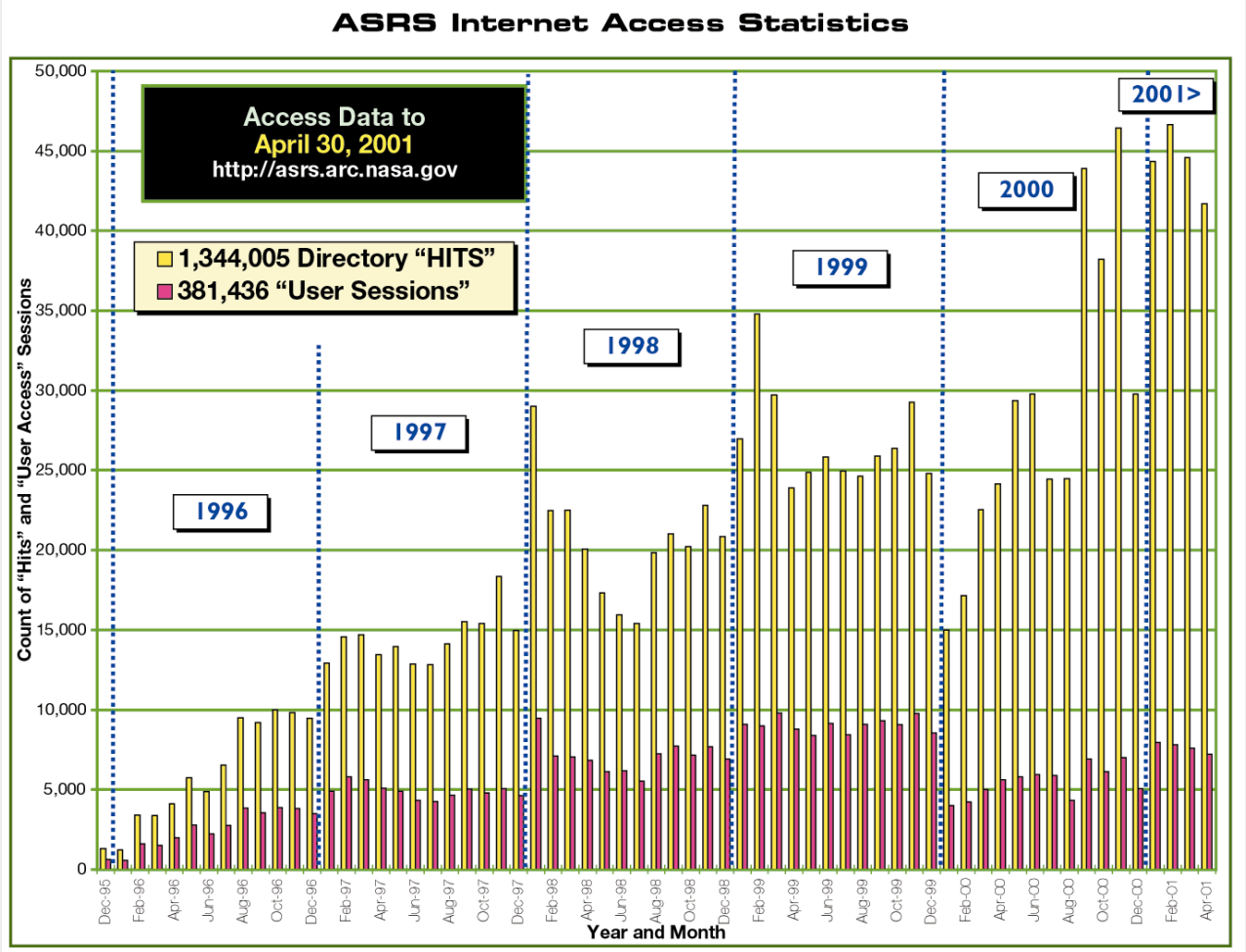
CALLBACK
From NASA's Aviation Safety Reporting System

ASRS Directline

Education

"I would like to get a [CALLBACK] subscription for San Jose Tower. The other Towers in the area use CALLBACK for monthly training and we would like to institute that program here."

- Letter to ASRS



ASRS Home Page
http://asrs.arc.nasa.gov

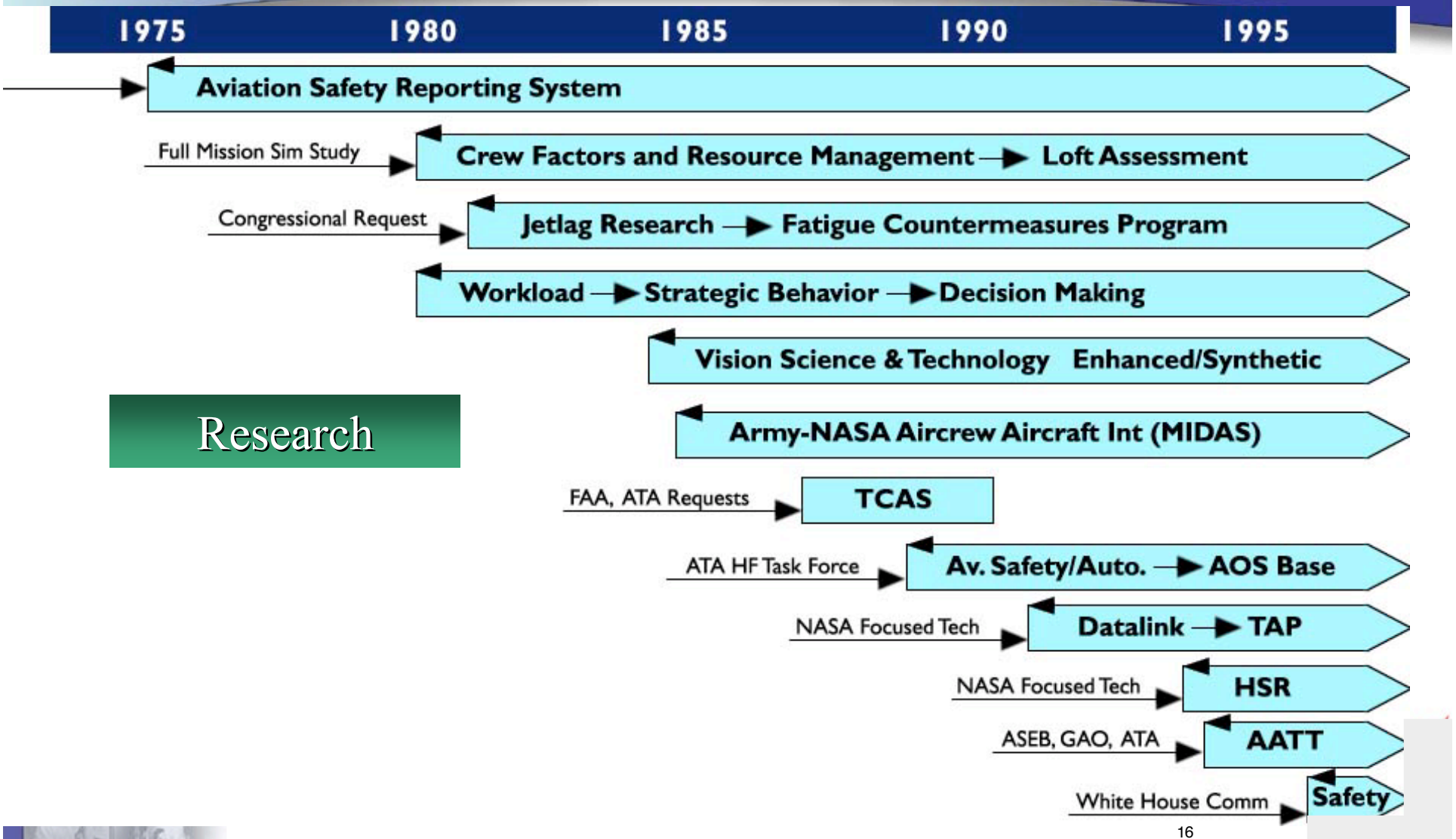
ASRS Database Access at FAA NASDAC Site:
http://nasdac.faa.gov

ASRS Quick Responses

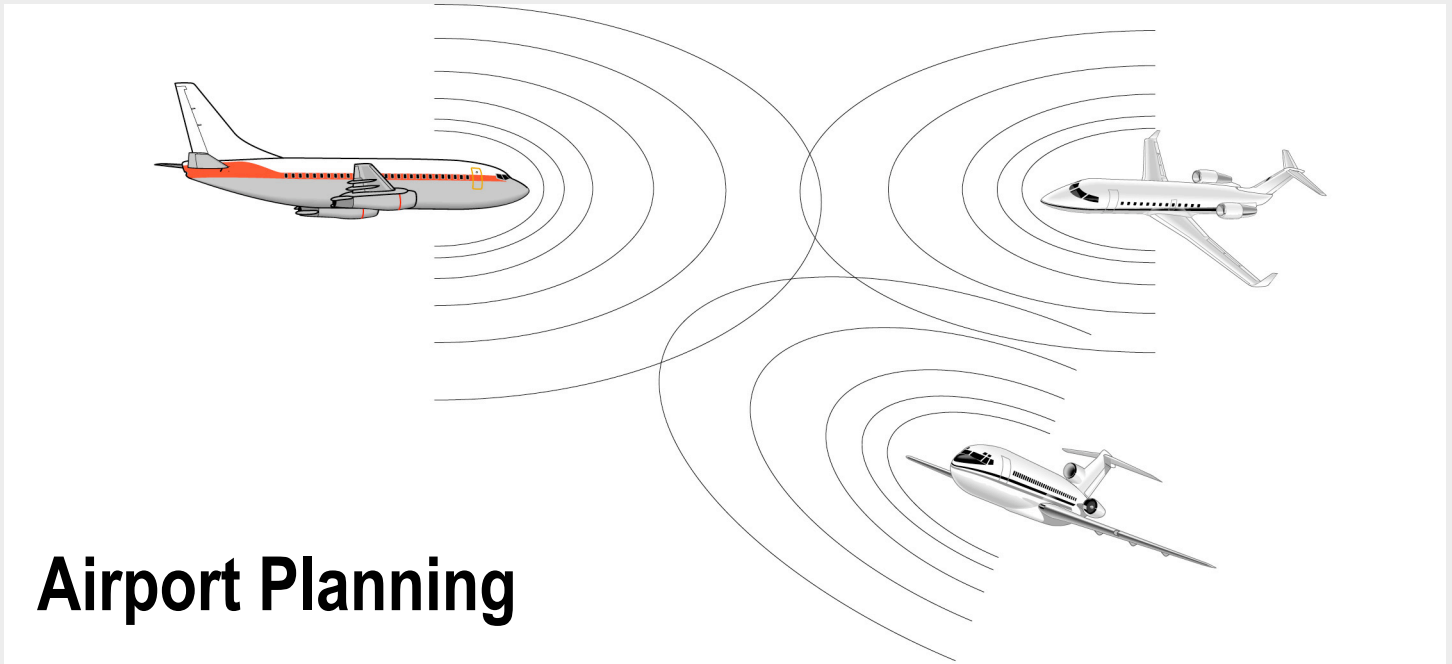
Research

- **FAA**
  - ASRS Runway Safety Incidents at U.S Airports
  - General Aviation Controlled Flight Toward Terrain Incidents
  - FAA Proposed Rule Change (FAR 91.129i)
  - NMAC Data Analysis
- **NTSB**
  - Top 20 Airports — Ground Conflicts Data
  - Analysis of International Incidents
  - EMB-120 Engine Incidents
  - Analysis of ARTCC Equipment Outages
- **NASA-Ames Research Center Programs**

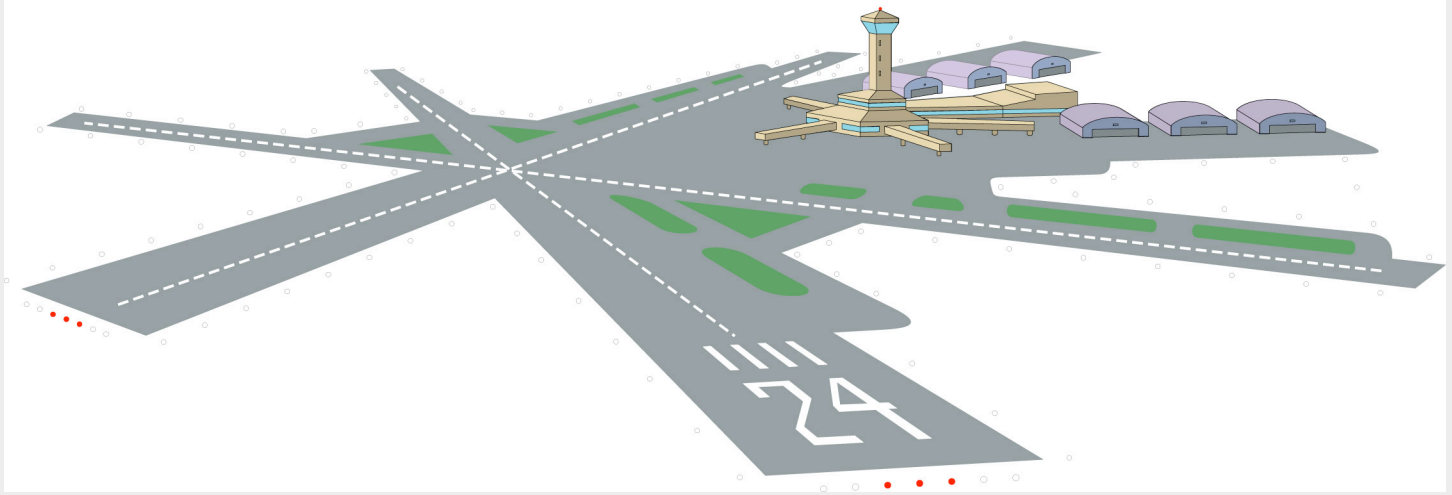
ASRS Contributions to Human Factors Research at NASA Ames



Research



Airport Planning



ASRS Information Used in Airport Planning

ASRS Database Information Previously Used for Airport, Airspace, ATM, Technology Development, Rulemaking, Procedure Evaluation, etc.

- **Honolulu Approach/Departure Corridor Replanning**
- **Runway Safety**
  - **Extensive evaluation of ASRS reports to contribute to FAA Runway Safety Office effort to identify airport "hot spots", intersection issues, and provide insights with data not collected anywhere else.**
- **Source for numerous airport evaluations**
- **Alerts on ATM and airport technologies**
  - **AMASS, etc**